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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,546	10/10/2003	Roger Proksch	14083-004002	2640

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EXAMINER

LARKIN, DANIEL SEAN

ART UNIT PAPER NUMBER

2856

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/683,546	PROKSCH, ROGER	
	Examiner	Art Unit	
	Daniel S. Larkin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Reference numeral -- 222 -- does not appear within Figure 3 as first suggested by the written disclosure on page 16, paragraph [0031], line 4 and page 17, paragraph [0031], lines 11 and 15.

Reference numeral -- 121 -- does not appear within Figure 3 as first suggested by the written disclosure on page 17, paragraph [0030], line 8.

Reference numeral -- 233 -- does not appear within Figure 7 as suggested by the written disclosure on page 28, paragraph [0028], line 1 and page 29, paragraph [0049], line 8.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Reference numeral "213", as shown in Figure 7, does not appear within the written disclosure.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "111" has been used to designate both a "reference assembly", as shown in Figures 2, 5, and 7, and a "Z-tube", as shown in Figure 3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to because of the following:

The specification, page 15, paragraph [0030], line 1, indicates that reference numeral "105 represents a lower free end of actuator assembly 104, however, reference to Figure 2 appears to show that "105" is pointing to an incident light beam from light source 126.

Reference numeral "122" appears twice within Figure 3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

6. The disclosure is objected to because of the following informalities:

Page 1, paragraph [0001], line 2: The phrase --, now abandoned -- should be inserted after the date "May 8, 2002".

Page 1, paragraph [0001], line 3: The phrase -- now U.S. Patent No. 6,612,160, -- should be inserted after the Serial No. "09/803,268".

Page 13, paragraph [0019], line 4: A -- semicolon" should be inserted after the symbol "Z"; and a separate paragraph should be generated for the description of Figure 2.

Page 16, paragraph [0030], line 3: Reference numeral "11" should be deleted.

Page 16, paragraph [0030], line 17: Reference numeral "10" should be deleted; and the conjunction -- and -- should be inserted in its place.

Page 17, paragraph [0031], line 6: A -- comma -- should be inserted after the term "radiation" and after the symbol "L".

Page 17, paragraph [0031], line 8: Reference numeral "121" should be corrected to read -- 122 --.

Page 18, paragraph [0031], line 7: A -- period -- should be inserted after the term "detector".

Page 19, paragraph [0033], line 11: The numeral "1521" should be corrected to read -- 152 --; and a -- period -- should be inserted after reference numeral "152".

Page 20, paragraph [0034], line 2: Reference to numeral "20" should be deleted.

Page 20, paragraph [0034], line 7: Reference to numeral "14" should be deleted.

Page 20, paragraph [0034], line 13: Reference to numeral "5" should be deleted.

Page 22, paragraph [0036], line 8: The phrase "6.e, a coupling)" should be corrected to read -- (i.e., a coupling) -- or -- (e.g., a coupling) --.

Page 22, paragraph [0036], lines 12 and 17: The term "Figure" should be corrected to read -- FIGURE --.

Page 22, paragraph [0036], line 18: The term "Z-tube" should be corrected to read -- Z tube --.

Page 23, paragraph [0037], line 6: A -- comma -- should be inserted after reference numeral "217".

Page 23, paragraph [0038], line 11: The letter "Z" should be corrected to read -- the Z direction --.

Page 25, paragraph [0041], lines 5 and 9: The term "Figure" should be corrected to read -- FIGURE --.

Page 26, paragraph [0042], line 2: A -- comma -- should be inserted after the term "embodiment".

Page 26, paragraph [0043], line 2: The phrase "end- to-end" should be corrected to read -- end-to-end --.

Page 26, paragraph [0043], line 4: The term "actuator110" should be corrected to read -- actuator 110 --.

Page 28, paragraph [0046], line 3: The term "ide ntified" should be corrected to read -- identified --.

Page 28, paragraph [0046], line 4: A -- comma -- should be inserted after reference numeral "232C".

Page 28, paragraph [0048], line 4: Reference numeral "233" should be corrected to read -- 213 --.

Page 28, paragraph [0048], line 2: The numeral "232(3" should be corrected to read -- 232C --.

Page 29, paragraph [0049], line 8: Reference numeral "233" should be corrected to read -- 213 --; and a -- comma -- should be inserted after numeral "236".

Page 30, paragraph [0052], line 4: Reference numeral "232(7" should be corrected to read -- 232C --.

Page 32, paragraph [0055], line 11: The article -- a -- should be inserted after the term "includes".

Page 32, paragraph [0056], lines 2 and 4: The term "Figure" should be corrected to read -- FIGURE --.

Page 34, paragraph [0058], line 5: The second occurrence of the letter "Z" should be corrected to read -- the Z direction --.

Page 35, paragraph [0060], line 1: The term "Figure" should be corrected to read -- FIGURE --.

Page 36, paragraph [0063]: Reference to paragraph "[0063]" should be deleted since paragraph [0062] has not been completed.

Page 36, paragraph [0064], line 5: Reference to numeral "15" should be deleted.

Page 36, paragraph [0064], line 7: The term – to – should be inserted after the term "coupled".

Page 36, paragraph [0064], line 12: The term "retro-" should be deleted.

Page 36, paragraph [0064], line 13: Reference to numeral "20" should be deleted.

Page 37, paragraph [0065], line 15: A -- comma -- should be inserted after the term "actuated".

Page 37, paragraph [0065], line 22: Reference to numeral "15" should be deleted.

Page 38, paragraph [0067], line 4: Reference to numeral "20" should be deleted.

Page 38, paragraph [0067], line 8: The term "Figure" should be corrected to read -- FIGURE --.

Page 39, paragraph [0068], line 1: The term "Intermittent" should be corrected to read -- intermittent --.

Page 39, paragraph [0069], line 3: A -- comma -- should be inserted after the numeral "110".

Page 41, paragraph [0070], line 1: Reference to numeral "20" should be deleted.

Page 41, paragraph [0071], line 5: The term "Intermittent" should be corrected to read -- intermittent --.

Page 43, paragraph [0073], line 7: Reference to numeral "15" should be deleted.

Page 44, paragraph [0074], line 14: A – comma – should be inserted after the second occurrence of the numeral "232"

Page 44, paragraph [0075], line 2: The letter "I" should be deleted. Appropriate correction is required.

Claim Objections

7. Claims 1-25 and 28-37 are objected to because of the following informalities:

Re claim 1, claim line 12: To what does the term "its" refer?

Re claim 3, claim line 3: A -- comma -- should be inserted after the term "section".

Re claim 4, claim lines 4 and 5: The phrase "said x and y-axis translating stage" lacks antecedent basis.

Re claim 5, claim lines 1, 3, and 4: The term "multi-bar" should be corrected to read -- multiple bar --.

Re claim 7, claim line 1: The phrase "the metrology apparatus" lacks antecedent basis.

Re claim 9, claim line 10: The term -- first -- has been misspelled.

Re claim 12, claim line 7: The conjunction -- and -- should be inserted after the term "actuator".

Re claim 28, claim line 4: The conjunction -- and -- should be inserted after the term "beam".

Re claim 28, claim line 5: The conjunction "and" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 35, claim lines 1 and 2: How can the source be fixed relative to the actuator when the claim which forms the dependency, claim 33, recites that the source is coupled to the actuator which moves?

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(f) he did not himself invent the subject matter sought to be patented.

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11. Claims 9, 12, 13, 22-25, 28, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,172,002 (Marshall). The reference to Marshall discloses a piezoelectric actuator (18) having a first end fixed to a base/microscope frame and a second free end; a first reflector assembly (34) fixed proximate the free end of the actuator (18); a first radiation source (20a) fixed to the frame; and a first electromagnetic radiation detector (26). Since a stage (14) holding the reflector assembly (34) is movable in the X, Y, and Z-planes, the changes in the light received by the detector would be indicative of movement of the piezoelectric actuator (18).

With respect to the limitation of claim 13, the reference to Marshall discloses that the light source is a laser diode (20A).

With respect to the limitation of claim 22, the reference to Marshall discloses a lens (22) located between the light source (20, 20A) and a radiation detector (26).

With respect to the limitations of claim 23, the reference to Marshall discloses in the embodiments, as shown in Figures 2 and 3, a light source (20) mounted to the free end of the actuator (18).

With respect to the limitation of claim 24, the reference to Marshall discloses a scanning probe microscope.

12. Claims 9-13, 24, 25, 28, 36, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,714,682 (Prater et al.).

The reference to Prater et al. discloses a scanning stylus atomic force microscope having a first tube scanner (12), made up of one or more piezoelectric tubes, a second

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scanner comprising a mounting member (42) for moving in the Z-direction, a first reflector assembly/beam splitter (65) located proximate the free end of the actuator (42), a first radiation source (10); and a first radiation/position detector (66). The reference discloses, col. 9, lines 62-67 through col. 10, lines 1-16, that the position detector (66) may be used to measure, calibrate, or control the motion of the scanner (12). Although not expressly shown, a microscope frame is inherent to an atomic force microscope. With respect to the limitation of claim 10, the reference discloses a cantilever (14) having a reflective surface fixed to the scanner (12) via a mounting member.

With respect to the limitation of claim 11, the reference discloses, as shown in Figure 7, a second radiation/position detector (16) that receives light reflected from the cantilever's reflective surface.

With respect to the limitation of claim 13, the reference to Prater et al. discloses the light source (10) as being a laser.

With respect to the limitation of claim 22, the reference to Prater et al. discloses the placement of a lens (60, 63) between the light source (10) and the sensor/position detector (66).

With respect to the limitation of claim 24, the reference to Prater et al. discloses an atomic force microscope, which is a synonym for a scanning probe microscope.

With respect to the limitation of claim 36, the reference to Prater et al. discloses at least one lens (60, 63) that moves in conjunction with the actuator (12).

13. Claims 9-12, 22, 24, 25, 28, 36, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,656,769 (Nakano et al.).

The reference to Nakano et al. discloses a scanning probe microscope having a microscope frame (6); a plurality of piezoelectric actuators (1, 2) having first ends fixed to the frame (6) and second free ends; a first reflector assembly (1c, 2c) fixed proximate the free ends of the actuators (1, 2); a plurality of light/radiation sources (1a, 2a) fixed with respect to the frame (6); and a plurality of radiation detectors (1d, 2d). Movement of the actuators (1, 2) cause the light beams from the radiation sources (1a, 2a) to hit the reflectors (1c, 2c) and subsequently the detectors (1d, 2d) at different angles thus allowing one to detect and measure changes in the position of the actuators (1, 2).

With respect to the limitation of claim 10, the reference to Nakano et al. discloses a cantilevered probe (4) having a fixed end mounted to the free ends of the actuators (1, 2). The probe (4) is provided with a reflective surface.

With respect to the limitation of claim 11, the reference to Nakano et al. discloses a radiation detector (13) disposed to receive light reflected from the cantilever's reflective surface.

With respect to the limitation of claim 22, the reference to Nakano et al. discloses that placement of a lens (1b, 2b) between the light sources (1a, 2a) and the position detectors (1d, 2d).

14. Claims 1-37 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

The reference to US 6,530,268 (Massie) has all of the same drawing figures as does Applicant and also discloses all that is claimed by Applicant. This application,

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Serial No. 10/683,546, with only Roger Proksch as a single inventor claims to be a continuation of U.S. Serial No. 10/142,646, with Roger Proksch again as a single inventor. Application Serial No. 10/142,646 in turn claims to be a continuation of U.S. Serial No. 09/803,268 with discloses Roger Proksch and James Massie as co-inventors. The reference recited above, with James Massie as a sole inventor, is claimed to be a continuation-in-part of U.S. Serial No. 09/803,268. Since the above cited reference discloses all of the claimed limitations, some explanation by the Applicant needs to be submitted.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,656,769 (Nakano et al.).

The reference to Nakano et al. discloses a scanning probe microscope utilizing light emitting diodes (1 a, 2a) as means for generating a light beam which changes direction upon movement of an actuator. Although the reference does not disclose a laser, the Examiner takes the position that a light emitting diode is a functionally equivalent means for generating a light beam.

17. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,172,002 (Marshall).

The reference to Marshall discloses an optical measuring device including a light source (20) for generating a beam; a sensor (26) that detects a position of the beam. The light source (20) is mounted on a stage (14) that is fixed to the free end of a piezoelectric actuator (18).

With respect to the limitation of claim 33, the light source generates a light beam in the Z-direction. The piezoelectric actuator has the ability to move the stage (14) and the light source in the X, Y, and Z-directions. Therefore, the light source has the ability to produce a light beam that is directed orthogonally to the movement of the actuator when the actuator moves in the X and Y-directions only.

With respect to the limitation of claim 34, the reference discloses the placement of a lens (22) between the light source (20) and the detector (26).


With respect to the limitation of claim 35, the reference shows an embodiment, as shown in Figures 5 and 6, whereby a light source (20A) is fixed relative to the actuator (18) and has the ability to direct a beam orthogonally to the movement of the actuator (18) when the actuator displaces the stage (14) in the Z-direction.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
15 March 2004



DANIEL S. LARKIN
PRIMARY EXAMINER